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| 10/510,261 | 10/05/2004 | Ronaldus Maria Aarts | NL 020284 | 8738 |

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| EXAMINER | |
|---|---|
| NGUYEN, KHAI M | |
| **ART UNIT** | **PAPER NUMBER** |
| 2819 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

TH

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/510,261 | AARTS ET AL. | |
| | Examiner | Art Unit | |
| | Khai M. Nguyen | 2819 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *19 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *7,8 and 11* is/are allowed.

6)☒ Claim(s) *1-6, 9-10, and 12-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

### *Allowable Subject Matter*

2. The indicated allowability of claim 9 is withdrawn in view of the newly discovered reference(s) to **US 6,430,295** to Handel et al. Rejections based on the newly cited reference(s) follow.

### *Claim Objections*

3. Claims 10 and 13 are objected to because the recited "adaptive filter" and "prediction filter" are unclear whether they are the same filter or two different filters. Clarification is required. Thus, these claims are examined as best understood by the examiner.

### *Claim Rejections - 35 USC § 102*

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 9-10, and 12-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Handel et al. (US 6,430,295) [hereinafter, Handel].

Regarding claim 1, Handel discloses a method of encoding (by encoder 100, 200, 400 of Fig. 1, 2, or 4, respectively) a multi-channel signal (115/125 and/or 215/225) including at least a first signal component ($y_2(k)$) and a second component ($\hat{y}_1(k)$), the method comprising the acts of:

determining a set of filter parameters (i.e., coefficients of filter 135 – col. 1, lines 52-57) of a prediction filter (FIR filter 135 of Fig. 1 or 235 of Fig. 2 or 4) such that the prediction filter (135 or 235) provides an estimate ($\hat{y}_1(k)$) of the second signal component when receiving the first signal component ($y_2(k)$) as an input;

controlling the prediction filter (135 or 235) by an error signal (e(k) – col. 1, lines 48-51) indicative of a difference of the second signal component ($\hat{y}_1(k)$) and the estimate of the second signal component ($\hat{y}_1(k)$); and

representing (to an applicable application(s) including a cellular radio system – line 61 of col. 2 to line 8 of col. 3) the multi-channel signal (115/125 and/or 215/225) as the first signal component and the set of filter parameters.

Regarding claim 2, Handel discloses the method of claim 1, wherein the act of determining the filter parameters (the filter coefficients of 135 or 235) such that a difference (e(k)) of the second signal component and the estimated signal component is smaller than a predetermined value (col. 1, lines 47-58).

Regarding claim 3, Handel discloses the method of claim 1, wherein the representing the multi-channel signal as the first signal component ($y_2(k)$) and the set of filter parameters (filter coefficients of 135 or 235) comprises the act of representing (to a radio communication application – col. 3, lines 1-8) the multi-channel signal as the first signal component ($y_2(k)$),the set of filter parameters (filter coefficients of 135 or 235), and an error signal (e(k)) if the error signal is not smaller than a predetermined value (col. 4, lines 19-46).

Regarding claim 4, Handel discloses the method of claim 1, wherein the first signal component ($y_2(k)$) corresponds to a first signal energy and the second signal component ($y_1(k)$) corresponds to a second signal energy smaller or different than the first signal energy (col. 1, lines 5-67).

Regarding claims 5-6, Handel discloses the method of claim 1 including transforming (i.e., analog pre-processing and analog-to-digital converting – col. 1, lines 44-47) at least (col. 2, lines 49-50) a first source signal component (110 of Fig. 1 or 210 of Fig. 2 or 4) and a second source signal component (120 of Fig. 1 or 220 of Fig. 2 or 4) of a multi-channel source signal into the first and second signal components ($y_2(k)$; ($y_1(k)$), wherein the multi-channel source signal comprises comprises a stereophonic signal including a left signal component (115 or 215) and a right signal component (125 or 225) (col. 1, lines 35-43).

Regarding claim 9, Handel discloses (Fig. 1, 2 or 4) a method encoding a multi-channel signal including at least a first signal component ($y_2(k)$) and a second signal component ($y_1(k)$), the method comprising the acts of:

determining a set of filter parameters (coefficients of filter 135 or 235) of a prediction filter (coefficient of filter 135 or 235 – col. 1, lines 50-60; col. 4, lines 19-20) such that the prediction filter provides an estimate ($y\hat{}_1(k)$) of the second signal component when receiving the first signal component ($y_2(k)$), as an input; and

representing the multi channel signal as the first signal component and the set of filter parameters (to a radio communication(s) – col. 3, lines 1-8),

wherein the act of determining a set of filter parameters (i.e., filter coefficients) further comprises the act of determining at least one scaling parameter (adjusting coefficients) for scaling the estimate of the second signal component ($y\hat{}_1(k)$) such that a measure of correlation between the second signal component ($y_1(k)$) and the estimate of the second signal component ($y\hat{}_1(k)$) is increased (because the difference between signal or error signal e(k) is minimized – col. 1, lines 52-54; and col. 4, lines 19-23).

Regarding claim 10, Handel discloses a method of decoding (speech signal from microphones of Fig. 1, 2 or 4) multi-channel signal information, the method comprising the acts of:

receiving a first signal component (($y_2(k)$) and a set of filter parameters (filter coefficient of 135 or 235) of an adaptive filter (filter 135 or 235) controlled by an error signal (e(k)) indicative of a difference of a second signal component (($y_1(k)$) and an

estimate of the second signal component ($y\hat{}_1(k)$) (col. 1, lines 47-59; and col. 4, lines 19-33);

estimating the second signal component ($y\hat{}_1(k)$) using a prediction filter (135 or 235) corresponding to the received set of filter parameters (filter coefficients – col. 1, lines 52-58; and col. 4, lines 19-20), the prediction filter (135 or 235) receiving the received first signal component ($y_2(k)$) as an input.

Regarding claim 12, Handel discloses an arrangement (Fig. 1, 2 or 4) for encoding a multi-channel signal (110/120 or 210/220) including at least a first signal component ($y\hat{}_2(k)$) and a second signal component ($y\hat{}_1(k)$) the arrangement comprising:

a prediction filter (or estimator/filter135 or 235) for estimating (col. 1, lines 45-58) the second signal component ($y\hat{}_1(k)$), the prediction filter (135/235) corresponding to a set of filter parameters (filter coefficients of 135 or 235; col. 1, lines 50-55; col. 4, lines 19-20) and receiving the first signal component ($y\hat{}_2(k)$) as an input, wherein the prediction filter is controlled by an error signal (e(k)) indicative of a difference of the second signal component ($y_1(k)$) and an estimate of the second signal component($y\hat{}_1(k)$); and

processing means (i.e., including means of a digital/analog converter) for representing (to a radio system – col. 3, lines 1-8) the multi-channel signal as the first signal component (y2(k)) and the set of filter (filter coefficients of 135 or 235).

Regarding claim 13, Handel discloses an arrangement (Fig. 1, 2, or 4) for encoding/decoding a multi-channel signal corresponding to at least two signal components (($y_2(k)$; ($y_1(k)$), the arrangement comprising:

receiving a first signal component (($y_2(k)$) and a set of filter parameters (filter coefficient of 135 or 235) of an adaptive filter (filter 135 or 235) controlled by an error signal (e(k)) indicative of a difference of a second signal component (($y_1(k)$) and an estimate of the second signal component ($y\hat{}_1(k)$) (col. 1, lines 47-59; and col. 4, lines 19-33);

estimating the second signal component ($y\hat{}_1(k)$) using a prediction filter (135 or 235) corresponding to the received set of filter parameters (filter coefficients – col. 1, lines 52-58; and col. 4, lines 19-20), the prediction filter (135 or 235) receiving the received first signal component ($y_2(k)$) as an input.

Regarding claims 14-16, Handel discloses an apparatus and a method of using the same (see, Fig. 1, 2, or 4) comprising the acts of:

determining a set of filter parameters of a prediction filter (filter coefficients of 135 or 235) such that the prediction filter (135/235) provides an estimate ($y\hat{}_1(k)$) of the second signal component ($y_1(k)$), when receiving the first signal component ($y_2(k)$), as an input; and

representing (to an applicable application(s) including a cellular radio system – line 61 of col. 2 to line 8 of col. 3) the multi-channel signal as the first signal component (x(n)) and the set of filter parameters (filter coefficients of 135 or 235).

Claims 7-8 and 11 are allowed. The following is a statement of reasons for the indication of allowable subject matter: see previous office action.

***Prior Art***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclose (notes: all references cited on PTO-892 Form attached).

***Contact Information***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Khai M. Nguyen whose telephone number is 571-272-1809. The examiner can normally be reached on 9:00 - 5:30 Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rexford (Rex) Barnie can be reached on 571-272-7492. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

April 21, 2007
Khai M. Nguyen
Art Unit: 2819
571-272-1809